MODINE

75-535.11
5H605846A Rev. U

December, 2008

SELECTION AND INSTALLATION INSTRUCTIONS
high altitude orifice kit
models PD/BD, PDP/BDP, PSH/BSH
and model series “D”, “H”, “I”, “O” duct furnace/make up air units
(not including separated combustion)

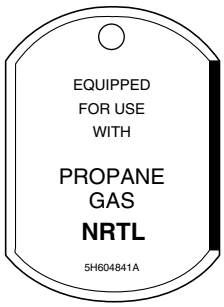
⚠ WARNING

1. All field gas piping must be pressure/leak tested prior to operation. Never use an open flame. Use a soap solution or equivalent for testing.
2. Gas supply shall be shut-off and the electrical power disconnected before proceeding with the conversion. Failure to do so could result in fire, explosion or electrical shock.

IMPORTANT

1. The use of this manual is specifically intended for a qualified installation and service agency. All installation and service of these kits must be performed by a qualified installation and service agency.
2. These instructions must also be used in conjunction with the Installation and Service manual originally shipped with the appliance being converted, in addition to any other accompanying component supplier literature.

Figure 1.1 - Gas Designation Disc



HIGH ALTITUDE CONVERSION

For Existing Natural or Propane Gas Units

Gas-fired equipment ratings are certified by C.S.A. For elevations above 2000 ft., ANSI Z223.1 requires ratings be reduced 4 percent for each 1000 ft. above sea level. C.G.A. requires that ratings be reduced 10% at elevations above 2000 ft. **To accommodate higher altitude operation, equipment must be converted by changing orifices as explained in this instruction sheet.** Tables 2.1 thru 5.2 list orifice kits which comply with both ANSI Z223.1 recommendations and C.S.A. requirements.

As Modine Manufacturing Company has a continuous product improvement program, it reserves the right to change design and specifications without notice.

Table of Contents

	Pages
High altitude conversion	1
High altitude propane gas conversion from natural gas	1
Selection of the proper kit	1
Installation of kits	6
Cross reference	8

For Units being Converted from Natural Gas to Propane Gas Concurrently

IMPORTANT

Conversion from natural gas to propane gas **is allowed** for PD/BD, PDP/BDP, and PSH/BSH models with 11,12, 30, or 31 control codes, built in January, 1987 or later. **For this conversion, both a propane conversion kit and a propane high altitude kit must be used.**

Follow carefully the propane conversion instructions, found in Bulletin 75-511, using the proper high altitude main burner orifices called out in this literature (75-535) **instead of** the orifices in propane conversion kit.

SELECTION OF THE PROPER KIT

To select the proper high altitude kit you need to know the specifics of the heater you will be converting, and the altitude it will be going into. If the high altitude kits are ordered at the same time as the unit heater, all pertinent information relative to the heater can be obtained from the catalog. If the high altitude kit is needed after the unit heater is in the field, you need to refer to the carton label or unit heater serial plate to obtain the necessary information. Figure 8.2 shows a portion of the unit heater serial plate where this information may be obtained. Referring to this figure, the prefix letters and successive numbers which are needed for kit selection are BV 100. The letters identify the model and the numbers the size of the unit. To determine the type of gas the unit is designed for, see the gas designation disc (Figure 1.1) and the type of gas, located on the serial plate.

After obtaining this information, refer to the proper selection chart. The selection charts are differentiated by product type, altitude and fuel type. **Remember, if you are converting from natural gas to propane gas and want to operate at high altitude, both a propane conversion kit and a propane high altitude kit must be used.** Selection charts include the proper kit suffix, the orifice drill size, and the number of orifices required for the unit being converted. Drill sizes are also stamped on each orifice.

HIGH ALTITUDE ORIFICE KIT SELECTION GUIDE

Table 2.1 - Natural Gas - 2001 to 4500 ft. Elevations - PD/BD, PDP/BDP, PSH/BSH, model series "D", "H","I", & ,"O" ① ②

Model	Model Size																
Type	30	50	75	100	125	130	150	170	175	200	225	250	280	300	340	350	400
PD/BD, PDP/BDP	**30**	**50**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**-**	**250**	-	**300**	-	**350**	**400**
Kit Suffix	-30	-121	-120	-22	-23	-	-90	-	-15	-26	-	-125	-	-92	-	-88	-126
Drill Size	41	31	24	31	29	-	24	-	30	28	-	21	-	24	-	26	28
Orifices in Kit	1	1	1	2	2	-	2	-	3	3	-	3	-	4	-	5	6
PSH/BSH	**-**	**-**	**-**	**-**	**-**	**130**	**150**	**170**	**-**	**-**	**225**	**-**	**280**	**-**	**340**	**-**	**-**
Kit Suffix	-	-	-	-	-	14	94	15	-	-	50	-	44	-	129	-	-
Drill Size	-	-	-	-	-	28	31	30	-	-	24	-	26	-	27	-	-
Orifices in Kit	-	-	-	-	-	2	3	3	-	-	3	-	4	-	5	-	-
Pressure Switch in Kit	-	-	-	-	-	NO	NO	NO	-	-	NO	-	NO	-	NO	-	-
③	**-**	**-**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**225**	**250**		**300**		**350**	**400**
Kit Suffix	-	-	-3	-22	-14	-	-94	-	-7	-8	-9	-10	-	-11	-	-85	-13
Drill Size	-	-	23	31	28	-	31	-	29	26	23	28	-	23	-	29	26
Orifices in Kit	-	-	1	2	2	-	3	-	3	3	3	4	-	4	-	6	6

Table 2.2 - Natural Gas - 4501 to 5500 ft. Elevations - PD/BD, PDP/BDP, PSH/BSH, model series "D", "H","I", & ,"O" ① ②

Model	Model Size																
Type	30	50	75	100	125	130	150	170	175	200	225	250	280	300	340	350	400
PD/BD, PDP/BDP	**30**	**50**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**-**	**250**	-	**300**	-	**350**	**400**
Kit Suffix	-33	-121	-127	-22	-23	-	-128	-	-15	-26	-	-112	-	-87	-	-129	-126
Drill Size	42	31	25	31	29	-	25	-	30	28	-	22	-	25	-	27	28
Orifices in Kit	1	1	1	2	2	-	2	-	3	3	-	3	-	4	-	5	6
PSH/BSH	**-**	**-**	**-**	**-**	**-**	**130**	**150**	**170**	**-**	**-**	**225**	**-**	**280**	**-**	**340**	**-**	**-**
Kit Suffix	-	-	-	-	-	504	508	15	-	-	513	-	95	-	522	-	-
Drill Size	-	-	-	-	-	29	31	30	-	-	25	-	27	-	28	-	-
Orifices in Kit	-	-	-	-	-	2	3	3	-	-	3	-	4	-	5	-	-
Pressure Switch in Kit	-	-	-	-	-	YES	YES	NO	-	-	YES	-	NO	-	YES	-	-
③	**-**	**-**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**225**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-	-	-120	-22	-14	-	-94	-	-15	-122	-50	-10	-	-92	-	-97	-93
Drill Size	-	-	24	31	28	-	31	-	30	27	24	28	-	24	-	30	27
Orifices in Kit	-	-	1	2	2	-	3	-	3	3	3	4	-	4	-	6	6

① All conversion kits have the same base part number 3H33231, only the suffix of the part number changes by model size.
② Does not include DFS, DBS, DCS, IFS, IBS, ICS.

③

Indoor Duct Furnaces	Weatherproof Duct Furnaces
DFG, DBG, DCG, IFG, IBG, ICG	HFG, HBG, HCG, HDG, HPG, OFG, OBG, OCG, ODG, OPG
DFP, DBP, DCP, IFP, IBP, ICP	HFP, HBP, HCP, HDP, HPP, OFP, OBP, OCP, ODP, OPP

HIGH ALTITUDE ORIFICE KIT SELECTION GUIDE

Table 3.1 - Natural Gas - 5501 to 6500 ft. Elevations - PD/BD, PDP/BDP, PSH/BSH, model series "D", "H","I", & ,"O" ① ②

Model	Model Size																
Type	30	50	75	100	125	130	150	170	175	200	225	250	280	300	340	350	400
PD/BD	**30**	**50**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**-**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-78	-121	-24	-22	-4	-	-102	-	-15	-7	-	-9	-	-44	-	-96	-85
Drill Size	43	31	26	31	30	-	26	-	30	29	-	23	-	26	-	28	29
Orifices in Kit	1	1	1	2	2	-	2	-	3	3	-	3	-	4	-	5	6
PDP/BDP	**30**	**50**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**-**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-78	-121	-501	-22	-4	-	-102	-	-15	-7	-	-9	-	-44	-	-96	-85
Drill Size	43	31	26	31	30	-	26	-	30	29	-	23	-	26	-	28	29
Orifices in Kit	1	1	1	2	2	-	2	-	3	3	-	3	-	4	-	5	6
Pressure Switch in Kit	NO	NO	YES	NO	NO	-	NO	-	NO	NO	-	NO	-	NO	-	NO	NO
PSH/BSH	**-**	**-**	**-**	**-**	**-**	**130**	**150**	**170**	**-**	**-**	**225**	**-**	**280**	**-**	**340**	**-**	**-**
Kit Suffix	-	-	-	-	-	504	508	94	-	-	514	-	518	-	522	-	-
Drill Size	-	-	-	-	-	29	31	31	-	-	26	-	28	-	28	-	-
Orifices in Kit	-	-	-	-	-	2	3	3	-	-	3	-	4	-	5	-	-
Pressure Switch in Kit	-	-	-	-	-	YES	YES	NO	-	-	YES	-	YES	-	YES	-	-
③	**-**	**-**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**225**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-	-	-127	-22	-23	-	-94	-	-15	-26	-56	-115	-	-87	-	-97	-126
Drill Size	-	-	25	31	29	-	31	-	30	28	25	29	-	25	-	30	28
Orifices in Kit	-	-	1	2	2	-	3	-	3	3	3	4	-	4	-	6	6
④	**-**	**-**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**225**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-	-	-127	-22	-23	-	-94	-	-15	-26	-56	-115	-	-87	-	-97	-526⑤
Drill Size	-	-	25	31	29	-	31	-	30	28	25	29	-	25	-	30	28
Orifices in Kit	-	-	1	2	2	-	3	-	3	3	3	4	-	4	-	6	6

Table 3.2 - Natural Gas - 6501 to 7500 ft. Elevations - PD/BD, PDP/BDP, PSH/BSH, model series "D", "H","I", & ,"O" ① ②

Model	Model Size																
Type	30	50	75	100	125	130	150	170	175	200	225	250	280	300	340	350	400
PD/BD	**30**	**50**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**-**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-78	-101	-83	-28	-4	-	-5	-	-94	-7	-	-50	-	-95	-	-100	-85
Drill Size	43	32	27	32	30	-	27	-	31	29	-	24	-	27	-	29	29
Orifices in Kit	1	1	1	2	2	-	2	-	3	3	-	3	-	4	-	5	6
PDP/BDP	**30**	**50**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**-**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-78	-101	-502	-28	-4	-	-5	-	-94	-7	-	-50	-	-95	-	-100	-85
Drill Size	43	32	27	32	30	-	27	-	31	29	-	24	-	27	-	29	29
Orifices in Kit	1	1	1	2	2	-	2	-	3	3	-	3	-	4	-	5	6
Pressure Switch in Kit	NO	NO	YES	NO	NO	-	NO	-	NO	NO	-	NO	-	NO	-	NO	NO
PSH/BSH	**-**	**-**	**-**	**-**	**-**	**130**	**150**	**170**	**-**	**-**	**225**	**-**	**280**	**-**	**340**	**-**	**-**
Kit Suffix	-	-	-	-	-	505	509	508	-	-	515	-	519	-	523	-	-
Drill Size	-	-	-	-	-	30	32	31	-	-	27	-	29	-	29	-	-
Orifices in Kit	-	-	-	-	-	2	3	3	-	-	3	-	4	-	5	-	-
Pressure Switch in Kit	-	-	-	-	-	YES	YES	YES	-	-	YES	-	YES	-	YES	-	-
③	**-**	**-**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**225**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-	-	-24	-22	-4	-	-94		-15	-7	-8	-91		-44		-97	-85
Drill Size	-	-	26	31	30	-	31		30	29	26	30		26		30	29
Orifices in Kit	-	-	1	2	2	-	3		3	3	3	4		4		6	6
④	**-**	**-**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**225**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-	-	-24	-22	-4	-	-94		-15	-7	-8	-91		-44		-97	-527⑤
Drill Size	-	-	26	31	30	-	31		30	29	26	30		26		30	29
Orifices in Kit	-	-	1	2	2	-	3		3	3	3	4		4		6	6

① All conversion kits have the same base part number 3H33231, only the suffix of the part number changes by model size.

② Does not include DFS, DBS, DCS, IFS, IBS, ICS.

③

Indoor Gravity Vented Duct Furnaces	Weatherproof Duct Furnaces
DFG, DBG, DCG, IFG, IBG, ICG	HFG, HBG, HCG, HDG, HPG, OFG, OBG, OCG, ODG, OPG,HFP, HBP, HCP, HDP, HPP, OFP, OBP, OCP, ODP, OPP

④

Indoor Power Vented Duct Furnaces
DFP, DBP, DCP, IFP, IBP, ICP

⑤ Kit for DFP, DBP, DCP, IFP, IBP, ICP, 400 size only, also includes a pressure switch.

HIGH ALTITUDE ORIFICE KIT SELECTION GUIDE

Table 4.1 - Propane Gas - 2001 to 4500 ft. Elevations - PD/BD, PDP/BDP, PSH/BSH, model series "D","H","I", & ,"O" ① ②

Model	Model Size																
Type	30	50	75	100	125	130	150	170	175	200	225	250	280	300	340	350	400
PD/BD, PDP/BDP	**30**	**50**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**-**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-52	-32	-33	-45	-35	-	-108	-	-63	-38	-	-82	-	-49	-	-42	-51
Drill Size	53	48	42	48	44	-	42	-	45	43	-	39	-	42	-	43	43
Orifices in Kit	1	1	1	2	2	-	2	-	3	3	-	3	-	4	-	5	6
PSH/BSH	**-**	**-**	**-**	**-**	**-**	**130**	**150**	**170**	**-**	**-**	**225**	**-**	**280**	**-**	**340**	**-**	**-**
Kit Suffix	-	-	-	-	-	77	47	63	-	-	39	-	40	-	42	-	-
Drill Size	-	-	-	-	-	43	48	45	-	-	42	-	43	-	43	-	-
Orifices in Kit	-	-	-	-	-	2	3	3	-	-	3	-	4	-	5	-	-
Pressure Switch in Kit	-	-	-	-	-	NO	NO	NO	-	-	NO	-	NO	-	NO	-	-
③	**-**	**-**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**225**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-	-	-1	-34	-77	-	-37	-	-79	-38	-64	-40	-	-41	-	-86	-51
Drill Size	-	-	40	47	43	-	47	-	44	43	40	43	-	40	-	44	43
Orifices in Kit	-	-	1	2	2	-	3	-	3	3	3	4	-	4	-	6	6

Table 4.2 - Propane Gas - 4501 to 5500 ft. Elevations - PD/BD, PDP/BDP, PSH/BSH, model series "D","H","I", & ,"O" ① ②

Model	Model Size																
Type	30	50	75	100	125	130	150	170	175	200	225	250	280	300	340	350	400
PD/BD, PDP/BDP	**30**	**50**	**75**	**100**	**125**	**-**	**150**	**175**	**-**	**200**	**-**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-31	-32	-33	-45	-46	-	-108	-63	-	-79	-	-64	-	-49	-	-42	-86
Drill Size	54	48	42	48	45	-	42	45	-	44	-	40	-	42	-	43	44
Orifices in Kit	1	1	1	2	2	-	2	3	-	3	-	3	-	4	-	5	6
PSH/BSH	**-**	**-**	**-**	**-**	**-**	**130**	**150**	**170**	**-**	**-**	**225**	**-**	**280**	**-**	**340**	**-**	**-**
Kit Suffix	-	-	-	-	-	506	510	109	-	-	516	-	40	-	524	-	-
Drill Size	-	-	-	-	-	44	48	46	-	-	27	-	43	-	43	-	-
Orifices in Kit	-	-	-	-	-	2	3	3	-	-	3	-	4	-	5	-	-
Pressure Switch in Kit	-	-	-	-	-	YES	YES	NO	-	-	YES	-	NO	-	YES	-	-
③	**-**	**-**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**225**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-	-	-30	-34	-35	-	-37	-	-63	-38	-48	-72	-	-111	-	-74	-51
Drill Size	-	-	41	47	44	-	47	-	45	43	41	44	-	41	-	45	43
Orifices in Kit	-	-	1	2	2	-	3	-	3	3	3	4	-	4	-	6	6

① All conversion kits have the same base part number 3H33231, only the suffix of the part number changes by model size.

② Does not include DFS, DBS, DCS, IFS, IBS, ICS.

③

Indoor Duct Furnaces	Weatherproof Duct Furnaces
DFG, DBG, DCG, IFG, IBG, ICG	HFG, HBG, HCG, HDG, HPG, OFG, OBG, OCG, ODG, OPG
DFP, DBP, DCP, IFP, IBP, ICP	HFP, HBP, HCP, HDP, HPP, OFP, OBP, OCP, ODP, OPP

HIGH ALTITUDE ORIFICE KIT SELECTION GUIDE

Table 5.1 - Propane Gas - 5501 to 6500 ft. Elevations - PD/BD, PDP/BDP, PSH/BSH, model series "D","H","I", & ,"O" ① ②

Model	Model Size																
Type	30	50	75	100	125	130	150	170	175	200	225	250	280	300	340	350	400
PD/BD	**30**	**50**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**-**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-31	-106	-78	-59	-46	-	-77	-	-109	-79	-	-48	-	-40	-	-42	-86
Drill Size	54	49	43	49	45	-	43	-	46	44	-	41	-	43	-	43	44
Orifices in Kit	1	1	1	2	2	-	2	-	3	3	-	3	-	4	-	5	6
PDP/BDP	**30**	**50**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**-**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-31	-106	-503	-59	-46	-	-77	-	-109	-79	-	-48	-	-40	-	-42	-86
Drill Size	54	49	43	49	45	-	43	-	46	44	-	41	-	43	-	43	44
Orifices in Kit	1	1	1	2	2	-	2	-	3	3	-	3	-	4	-	5	6
Pressure Switch in Kit	NO	NO	YES	NO	NO	-	NO	-	NO	NO	-	NO	-	NO	-	NO	NO
PSH/BSH	**-**	**-**	**-**	**-**	**-**	**130**	**150**	**170**	**-**	**-**	**225**	**-**	**280**	**-**	**340**	**-**	**-**
Kit Suffix	-	-	-	-	-	506	511	37	-	-	517	-	520	-	525	-	-
Drill Size	-	-	-	-	-	44	49	47	-	-	43	-	43	-	44	-	-
Orifices in Kit	-	-	-	-	-	2	3	3	-	-	3	-	4	-	5	-	-
Pressure Switch in Kit	**-**	**-**	**-**	**-**	**-**	**YES**	**YES**	**NO**	**-**	**-**	**YES**	**-**	**YES**	**-**	**YES**	**-**	**-**
③	**-**	**-**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**225**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-	-	-33	-45	-35	-	-47	-	-63	-38	-39	-72	-	-49	-	-74	-51
Drill Size	-	-	42	48	44	-	48	-	45	43	42	44	-	42	-	45	43
Orifices in Kit	-	-	1	2	2	-	3	-	3	3	3	4	-	4	-	6	6
④	**-**	**-**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**225**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-	-	-33	-45	-35	-	-47	-	-63	-38	-39	-72	-	-49	-	-74	-528⑤
Drill Size	-	-	42	48	44	-	48	-	45	43	42	44	-	42	-	45	43
Orifices in Kit	-	-	1	2	2	-	3	-	3	3	3	4	-	4	-	6	6

Table 5.2 - Propane Gas - 6501 to 7500 ft. elevations - PD/BD, PSH/BSH, model series "D", "H","I", & ,"O" ① ②

Model	Model Size																
Type	30	50	75	100	125	130	150	170	175	200	225	250	280	300	340	350	400
PD/BD	**30**	**50**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**-**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-31	-106	-78	-59	-46	-	-77	-	-37	-63	-	-39	-	-40	-	-99	-74
Drill Size	54	49	43	49	45	-	43	-	47	45	-	42	-	43	-	44	45
Orifices in Kit	1	1	1	2	2	-	2	-	3	3	-	3	-	4	-	5	6
PDP/BDP	**30**	**50**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**-**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-31	-106	-503	-59	-46	-	-77	-	-37	-63	-	-39	-	-40	-	-99	-74
Drill Size	54	49	43	49	45	-	43	-	47	45	-	42	-	43	-	44	45
Orifices in Kit	1	1	1	2	2	-	2	-	3	3	-	3	-	4	-	5	6
Pressure Switch in Kit	NO	NO	YES	NO	NO	-	NO	-	NO	NO	-	NO	-	NO	-	NO	NO
PSH/BSH	**-**	**-**	**-**	**-**	**-**	**130**	**150**	**170**	**-**	**-**	**225**	**-**	**280**	**-**	**340**	**-**	**-**
Kit Suffix	-	-	-	-	-	507	511	512	-	-	517	-	521	-	525	-	-
Drill Size	-	-	-	-	-	45	49	47	-	-	43	-	44	-	44	-	-
Orifices in Kit	-	-	-	-	-	2	3	3	-	-	3	-	4	-	5	-	-
Pressure Switch in Kit	-	-	-	-	-	YES	YES	YES	-	-	YES	-	YES	-	YES	-	-
③	**-**	**-**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**225**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-	-	-33	-45	-46	-	-47	-	-63	-79	-39	-119	-	-49	-	-74	-86
Drill Size	-	-	42	48	45	-	48	-	45	44	42	45	-	42	-	45	44
Orifices in Kit	-	-	1	2	2	-	3	-	3	3	3	4	-	4	-	6	6
④	**-**	**-**	**75**	**100**	**125**	**-**	**150**	**-**	**175**	**200**	**225**	**250**	**-**	**300**	**-**	**350**	**400**
Kit Suffix	-	-	-33	-45	-46	-	-47	-	-63	-79	-39	-119	-	-49	-	-74	-529⑤
Drill Size	-	-	42	48	45	-	48	-	45	44	42	45	-	42	-	45	44
Orifices in Kit	-	-	1	2	2	-	3	-	3	3	3	4	-	4	-	6	6

① All conversion kits have the same base part number 3H33231, only the suffix of the part number changes by model size.

② Does not include DFS, DBS, DCS, IFS, IBS, ICS.

③

Indoor Gravity Vented Duct Furnaces	Weatherproof Duct Furnaces
DFG, DBG, DCG, IFG, IBG, ICG	HFG, HBG, HCG, HDG, HPG, OFG, OBG, OCG, ODG, OPG,HFP, HBP, HCP, HDP, HPP, OFP, OBP, OCP, ODP, OPP

④

Indoor Power Vented Duct Furnaces
DFP, DBP, DCP, IFP, IBP, ICP

⑤ Kit for DFP, DBP, DCP, IFP, IBP, ICP, 400 size only, also includes a pressure switch.

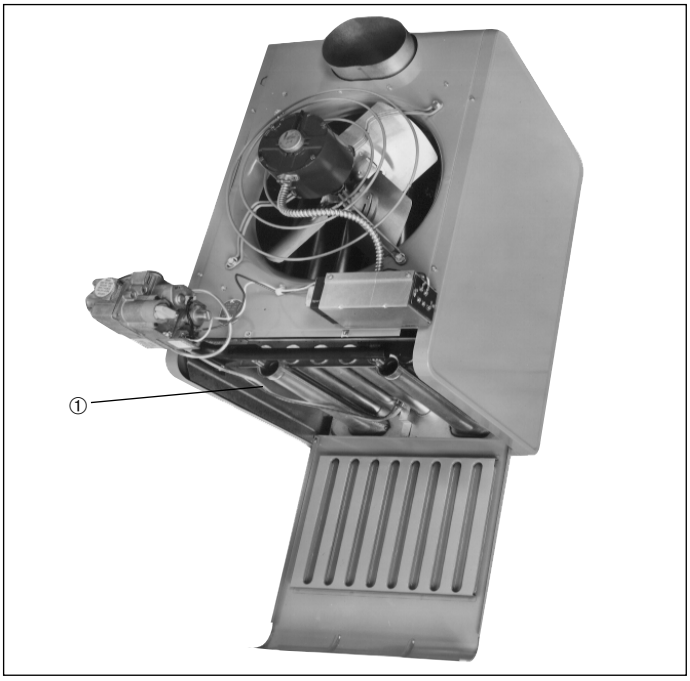
INSTALLATION

Conversion of any unit is the responsibility of, and the risk of the person making the conversion.

⚠ WARNING

1. Disconnect power and gas supply before making conversion.
2. All field gas piping must be pressure/leak tested prior to operation. Never use an open flame. Use a soap solution or equivalent for testing.

Figure 6.1 - Hinged Bottom for Burner Service



Step 1 Turn off all electricity and gas to unit.

PD/BD, PDP/BDP, PV/BV Models

Lower bottom pan to expose burner and manifold (see Figure 6.1).

"D", "H", "I", & "O" Models (not including separated combustion)

Remove weatherproof duct furnace section access door to obtain access to the manifold assembly (not applicable on indoor gravity vented models). See Figure 6.2.

Disconnect gas manifold at the ground joint union (field supplied ground joint union on DFG and IFG models equipped with standard control box). Remove the two screws holding the manifold to the heat exchanger support. Slide the manifold through the manifold bracket.

Figure 6.2 - Manifold Assembly Removal
(HFG model shown for reference)

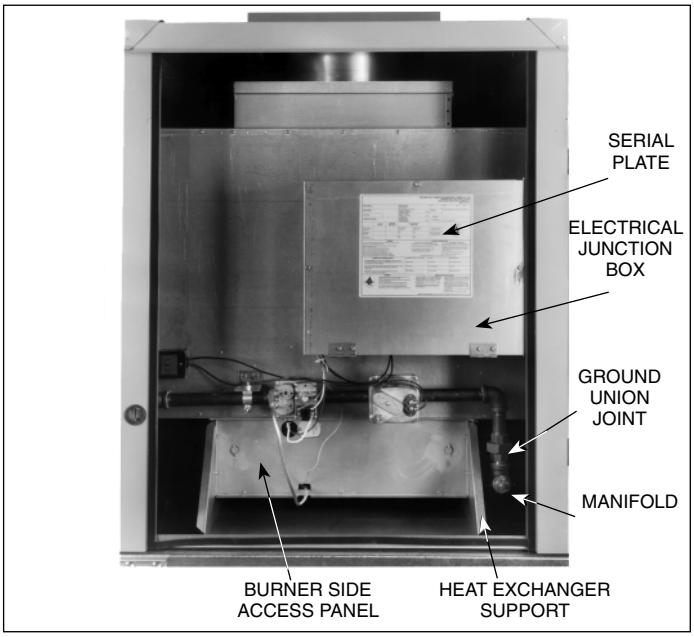
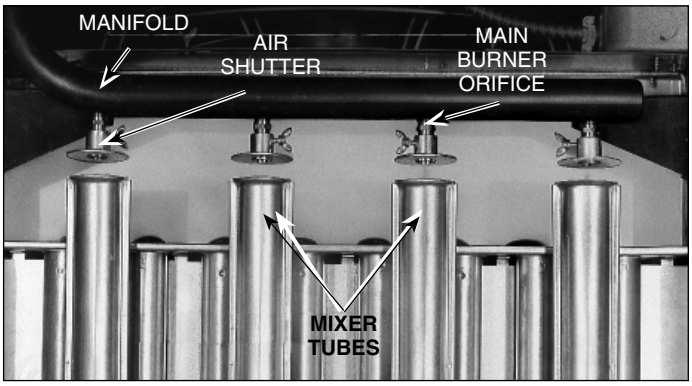


Figure 6.3 - Burner Orifices and Air Shutters



Step 2 Exchange main burner orifice(s) and install air shutters if provided (see Figure 6.3). Check the orifice number stamped on each orifice. Be sure that this number is the same number indicated on the kit parts list for the kit being installed (see previous tables).

FOR ALL "D", "H", "I", & "O" UNITS, PROCEED WITH STEP 3.

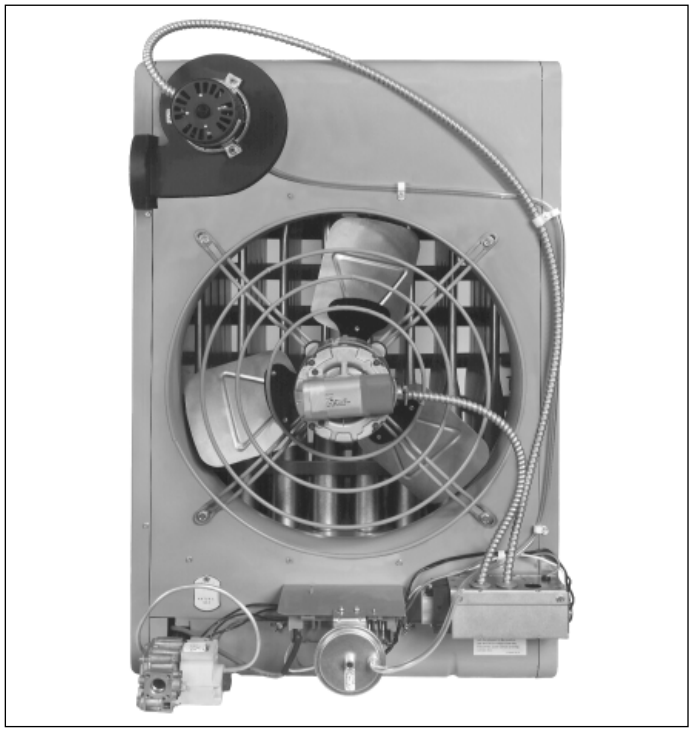
IF UNIT BEING CONVERTED IS A PD/BD, PDP/BDP, PSH/BSH PROCEED WITH STEP 4.

Step 3 **"D", "H", "I", & "O" Models**

Re-install the manifold assembly making certain that it is correctly positioned.

Step 4 If a new pressure switch is supplied with your kit, remove the old pressure switch and install the new one in it's place. Reconnect the pressure line to the new switch.

Figure 7.1 - PDP High Efficiency II Unit Heater



Step 5 On the High Altitude Conversion Label (see Figure 7.3) write the drill size, as stamped on orifice, with a permanent marker. Be sure to check correct orifice size using the selection instructions beginning on page 1.

Affix the High Altitude Conversion Label (Figure 7.3) adjacent to the units serial plate.

Step 6 Restore fuel supply to the unit.

Step 7 Check gas supply pressure at unit upstream from combination gas control. The supply pressure should be 6" - 7" W.C. on natural gas or 11" - 14" W. C. on propane gas.

Step 8 Connect the manometer (or gauge) to the outlet pressure tap on the combination gas control.

Step 9 Restore electric supply to unit.

Step 10 Follow lighting instructions on unit. Turn up thermostat setting to call for heat. After the main burners light, measure the outlet (manifold) pressure of the combination gas control. The pressure should be 3.5 in. W.C. for natural gas and 10 in. W.C. for propane gas. The outlet pressure can be adjusted at the control's regulator. Turning the adjustment clockwise will increase the outlet pressure while turning it counterclockwise will decrease the pressure.

Step 11 Check for leaks at all joints and connections in the gas lines. This is most easily done with a soap/water solution. Simply brush or spray some of the solution on a joint or connection and look for bubble formation.

Step 12 Observe the main burner flame. The flame should have a well-defined conical shape with the base anchored to the burner port. If the flame appears to be lifting or rising above the burner port (see Figure 7.2), loosen the thumb screw on the air shutter and slide the shutter forward toward the mixer tube (Figure 6.3).

If a majority of the flame is yellow, move the air shutter back away from the mixer tube. Slight yellow tips on a propane flame are common and are not objectionable.

For more specific flame control adjustment instructions, see the Installation and Service Manual which came with your unit.

Conversion of the unit is complete.

Figure 7.2 - Lifting Flame

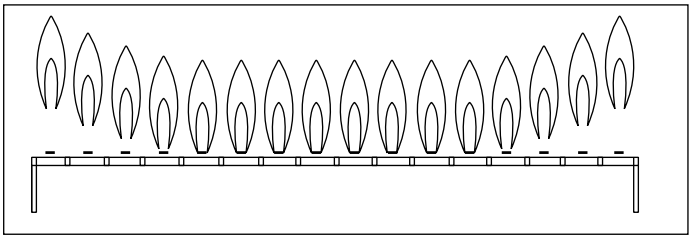


Figure 7.3 - High Altitude Conversion Label

NOTICE

THIS APPLIANCE EQUIPPED FOR HIGH ALTITUDE.

IN U.S. ACCORDING TO ANSI Z223.1
IN CANADA, ACCORDING TO C.G.A. CERTIFICATION

MAIN BURNER ORIFICES CHANGED TO [ ] DRILL SIZE.

PLACE THIS LABEL ADJACENT TO SERIAL PLATE. 5H70857A

CROSS REFERENCE

Table 8.1 - High Altitude Kit Cross Reference (3H # to Item Code)

3H#	FP# Item Code
3H33231-1	91684
3H33231-3	91686
3H33231-4	91687
3H33231-5	91688
3H33231-7	91690
3H33231-8	91691
3H33231-9	91692
3H33231-10	91693
3H33231-11	91694
3H33231-12	91695
3H33231-13	91696
3H33231-14	91697
3H33231-15	91698
3H33231-17	28537
3H33231-22	91700
3H33231-23	91701
3H33231-24	28538
3H33231-25	28539
3H33231-26	91702
3H33231-28	28540
3H33231-30	91703
3H33231-31	27977
3H33231-32	27978
3H33231-33	93986
3H33231-34	91704
3H33231-35	27979
3H33231-37	91706

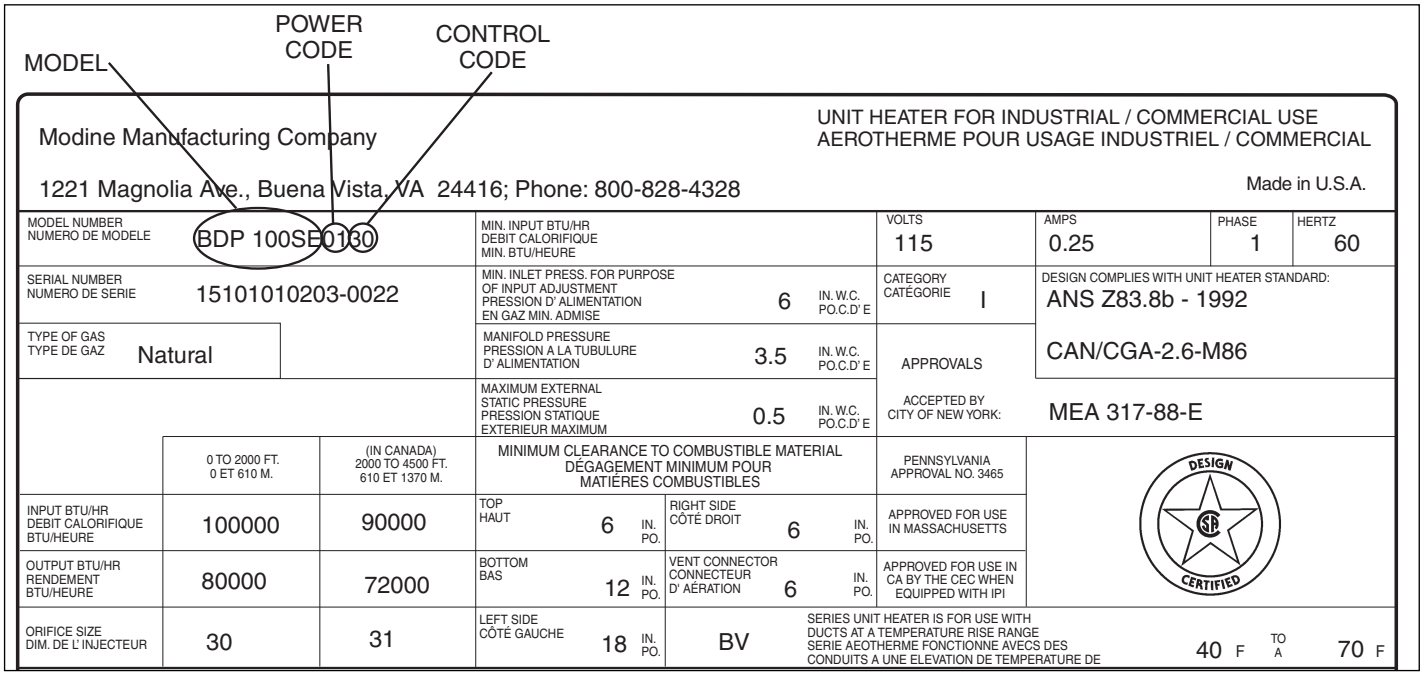
3H#	FP# Item Code
3H33231-38	91707
3H33231-39	91708
3H33231-40	91709
3H33231-41	91710
3H33231-42	91711
3H33231-43	91712
3H33231-44	28541
3H33231-45	93930
3H33231-46	91713
3H33231-47	97324
3H33231-48	29033
3H33231-49	27980
3H33231-50	29034
3H33231-51	93931
3H33231-52	91714
3H33231-53	29035
3H33231-54	33686
3H33231-55	29036
3H33231-56	29037
3H33231-59	93932
3H33231-61	29038
3H33231-62	29039
3H33231-63	27981
3H33231-64	91718
3H33231-65	29040
3H33231-66	91719
3H33231-67	29041

3H#	FP# Item Code
3H33231-68	33687
3H33231-69	29042
3H33231-70	91720
3H33231-71	33688
3H33231-72	91721
3H33231-73	91722
3H33231-74	91723
3H33231-75	33689
3H33231-76	33690
3H33231-77	91724
3H33231-78	91725
3H33231-79	91726
3H33231-80	91727
3H33231-82	27982
3H33231-83	91728
3H33231-84	27983
3H33231-85	91729
3H33231-86	91730
3H33231-87	27984
3H33231-88	27985
3H33231-90	27986
3H33231-91	91731
3H33231-92	93957
3H33231-93	93852
3H33231-94	91732
3H33231-95	93987
3H33231-96	91733

3H#	FP# Item Code
3H33231-97	91734
3H33231-98	91735
3H33231-99	91736
3H33231-100	91737
3H33231-101	93919
3H33231-102	93920
3H33231-106	93924
3H33231-108	93939
3H33231-109	93940
3H33231-111	93942
3H33231-112	93988
3H33231-115	93991
3H33231-119	27987
3H33231-120	27988
3H33231-121	27989
3H33231-122	27990
3H33231-123	33691
3H33231-125	27991
3H33231-126	27992
3H33231-127	27993
3H33231-128	27994
3H33231-129	27996
3H33231-130	29043
3H33231-131	29044
3H33231-132	29045
3H33231-133	29046
3H33231-504	49814

3H#	FP# Item Code
3H33231-505	49815
3H33231-506	49816
3H33231-507	49817
3H33231-508	49818
3H33231-509	49819
3H33231-510	49820
3H33231-511	49821
3H33231-512	49822
3H33231-513	49823
3H33231-514	49824
3H33231-515	49825
3H33231-516	49826
3H33231-517	49827
3H33231-518	49828
3H33231-519	49829
3H33231-520	49830
3H33231-521	49831
3H33231-522	49832
3H33231-523	49833
3H33231-524	49834
3H33231-525	49835
3H33231-526	56900
3H33231-527	56901
3H33231-528	56902
3H33231-529	56903

Figure 8.2 - Typical Serial Plate


MODEL
POWER CODE
CONTROL CODE
Modine Manufacturing Company
1221 Magnolia Ave., Buena Vista, VA 24416; Phone: 800-828-4328
UNIT HEATER FOR INDUSTRIAL / COMMERCIAL USE
AEROTHERME POUR USAGE INDUSTRIEL / COMMERCIAL
Made in U.S.A.
MODEL NUMBER / NUMERO DE MODELE
BDP 100SE0130
SERIAL NUMBER / NUMERO DE SERIE
15101010203-0022
TYPE OF GAS / TYPE DE GAZ
Natural
MIN. INPUT BTU/HR / DEBIT CALORIFIQUE MIN. BTU/HEURE
MIN. INLET PRESS. FOR PURPOSE OF INPUT ADJUSTMENT / PRESSION D' ALIMENTATION EN GAZ MIN. ADMISE
6 IN. W.C. PO.C.D' E
MANIFOLD PRESSURE / PRESSION A LA TUBULURE D' ALIMENTATION
3.5 IN. W.C. PO.C.D' E
MAXIMUM EXTERNAL STATIC PRESSURE / PRESSION STATIQUE EXTERIEUR MAXIMUM
0.5 IN. W.C. PO.C.D' E
VOLTS
115
AMPS
0.25
PHASE
1
HERTZ
60
CATEGORY / CATÉGORIE
I
APPROVALS
DESIGN COMPLIES WITH UNIT HEATER STANDARD:
ANS Z83.8b - 1992
CAN/CGA-2.6-M86
ACCEPTED BY CITY OF NEW YORK:
MEA 317-88-E
PENNSYLVANIA APPROVAL NO. 3465
APPROVED FOR USE IN MASSACHUSETTS
APPROVED FOR USE IN CA BY THE CEC WHEN EQUIPPED WITH IPI
DESIGN CERTIFIED
0 TO 2000 FT. 0 ET 610 M.
(IN CANADA) 2000 TO 4500 FT. 610 ET 1370 M.
MINIMUM CLEARANCE TO COMBUSTIBLE MATERIAL / DÉGAGEMENT MINIMUM POUR MATIÈRES COMBUSTIBLES
INPUT BTU/HR / DEBIT CALORIFIQUE BTU/HEURE
100000
90000
OUTPUT BTU/HR / RENDEMENT BTU/HEURE
80000
72000
ORIFICE SIZE / DIM. DE L' INJECTEUR
30
31
TOP / HAUT 6 IN. PO.
RIGHT SIDE / CÔTÉ DROIT 6 IN. PO.
BOTTOM / BAS 12 IN. PO.
VENT CONNECTOR / CONNECTEUR D' AÉRATION 6 IN. PO.
LEFT SIDE / CÔTÉ GAUCHE 18 IN. PO.
BV
SERIES UNIT HEATER IS FOR USE WITH DUCTS AT A TEMPERATURE RISE RANGE / SERIE AEOTHERME FONCTIONNE AVECS DES CONDUITS A UNE ELEVATION DE TEMPERATURE DE
40 F TO A 70 F

Commercial Products Group • Modine Manufacturing Company • 1500 DeKoven Avenue • Racine, Wisconsin 53403-2552
"I" & "O" Model Series - Phone: 1.866.823.1631 (Toll Free) • Fax: 1.800.204.6011
All Other Model Series - Phone: 1.800.828.4328 (HEAT) • Fax: 1.800.204.6011

© Modine Manufacturing Company 2008

Litho in USA